

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figure 1. This sheet replaces the original sheet containing Figure 1. Replacement sheets with better drawings for Figures 2 – 5 are also supplied with this amendment.

Attachment: Annotated Sheet Showing Changes
Replacement Sheets 1 - 5

REMARKS

In the specification, the paragraph corresponding to paragraph [0032] in the published application (second paragraph on page 7 of the as-filed application) has been amended to set out the coplanar relationship of the longitudinal axes of the tows in the tow groups, and also to correct a minor typographical error regarding the element number assigned to one of the tow groups.

Applicants have amended Figure 1 of the drawings to more clearly point out features of the invention. The features in question are part of the original disclosure, and no new matter has been added. An annotated, marked-up drawing showing the changes in red color is supplied with this amendment, along with a replacement sheet. Replacement sheets with better drawings for Figures 2 – 5 are also supplied with this amendment.

Claims 1-34 are pending in the application.

Claims 1, 17 and 18 have been amended.

Claims 1 and 17 now recite embodiments wherein aligned tows are arranged in tow groups with each tow having a longitudinal axis, and wherein the longitudinal axes of the tows are in a coplanar relationship. No new matter has been added and support for the amendments to Claims 1 and 17 is found in the Figures and in the specification.

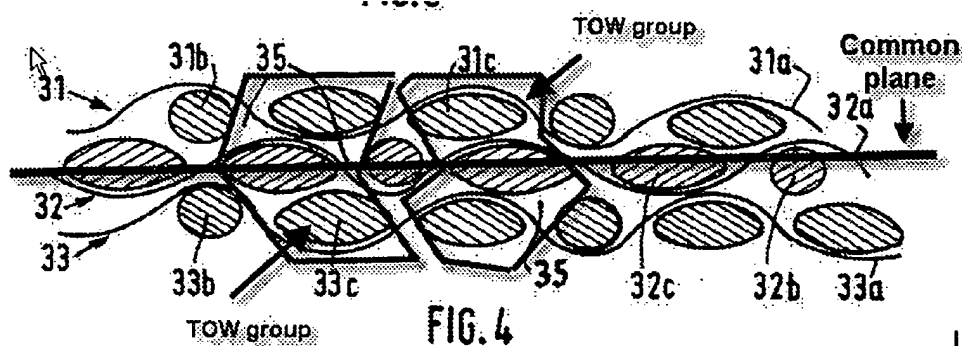
Claim 18 has been amended to provide proper antecedent basis with respect to amended Claim 17.

Rejection Under 35 U.S.C. 35 U.S.C. §103(a)

The Office has rejected claims 1-34 under 35 U.S.C. §103(a) as being unpatentable over Bompard et al. (U.S. Patent No. 5,484,642) in view of Vane (U.S. Patent No. 5,445,693).

The Office states that, as seen for example in Figure 3, the disclosure of Bompard et al teaches the fabric as claimed including a plurality of substantially parallel, coaxially aligned fiber element groups (33c, 31c), each of said groups having one or more fiber elements wherein a portion of said groups contain two or more fiber elements, and wherein the spacing between fiber elements in a element group is less than the spacing between adjacent element groups. The Office notes that element groups have axes which are in coplanar relationship as

shown in Figure 4.



The Office states that the fibers of Bompard are set forth as yarns rather than tows. The Office goes on to state that Vane teaches a reinforcing fabric which is formed from tows, yarns or threads.

The Office concludes it would have been obvious at the time the invention was made to one of ordinary skill in the art to provide the threads of Bompard et al as tows as shown by Vane in order to provide bundles of parallel monofilaments which eliminates the yarn forming step, i.e. spinning.

The Office also concludes that concerning the specific number of tows, i.e. odd or even, since such a modification would have involved a mere change in the number of a component and in order to provide the number which brings optimal strength, flexibility, hand, etc.

The Office further concludes that concerning the spacing between the tows, it would have been obvious at the time the invention was made to provide the tows with a specific spacing in order to find the spacing that brings about the optimal fabric strength.

In the Response to Arguments the Office concluded that the tow groups have axes which are in coplanar relationship to the extent claimed as set forth above in the rejection.

Applicants note that independent Claims 1 and 17 have been amended to recite the limitation that aligned tows are arranged in tow groups, each tow having a longitudinal axis, and that it is the longitudinal axes of the tows that are in a coplanar relationship. Neither Bompard nor Vane teach or suggest such coplanar tows arranged in tow groups "wherein the spacing between tows in a tow group is less than the spacing between adjacent tow groups" as recited in independent Claims 1 and 17, nor that there are advantages in doing so.

The MPEP, at § 2143.03, states that :[T]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)".

Applicants note that Fig. 4 of Bompard teaches a woven fabric having a two-dimensional plain weave pattern. Applicants submit that even if the teaching of Bompard was modified to incorporate tows, as taught by Vane, every tow would still be crimped as a direct result of this weaving pattern. Indeed, Vane teaches that such a weaving pattern would be undesirable, since Vane teaches "in woven mats the weft and warp are crimped where they intersect one another which reduces the strength thereof, and that they have a limited shelf life" (column 1, lines 22-25) Applicants therefore submit that one of ordinary skill in the art would not look to combine the teaching of Bompard with the teaching of Vane.

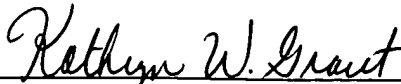
In contrast, Applicants' invention includes coplanar tows arranged in tow groups "wherein the spacing between tows in a tow group is less than the spacing between adjacent tow groups." Such an arrangement advantageously reduces or entirely eliminates crimping, while simultaneously providing flow channels that permit resin to flow evenly and quickly through the fabric. This in turn results in shorter processing time and a more consistent resin distribution, decreasing the likelihood of resin starved areas within the cured laminate.

Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §103(a).

Claims 2-16 and 18-34 are dependent claims and are allowable over the Bompard and Vane references for at least the reasons set forth above.

In light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested. If any fees are due in connection with the filing of this notice, including fees for extension of time, please charge such necessary fees to Deposit Account No. 50-0568.

Respectfully submitted,



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"ANNOTATED MARKED-UP DRAWING"
CRIMP-FREE INFUSIBLE REINFORCEMENT FABRIC
AND COMPOSITE MATERIAL THEREFROM

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Serial No.
10/669,536

Sheet 1 of 5

Docket No.
25253B

